

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (currently amended) A semiconductor switching device comprising:

a multi-source field effect transistor ~~FET (Tr5)~~ that including a main source electrode having a main source potential ~~electric field transistor FET (QA)~~ and a reference ~~FET (QB)~~ source electrode having a reference source potential;

a voltage comparator for detecting whether the main source potential is lower than the reference source potential;

a gate driving circuit (8) including the multi-source field effect transistor in an ON state when the main source potential is higher than the reference source potential, and in an OFF state when the main source potential is lower than the reference source potential based on the voltage comparator detection;

a reference current setting circuit (11) for feeding a reference current (Iref) that including a constant component current (Irefc) and a transient component current (Ireftr) to the reference source electrode FET (QB) such so that [[a]] the main source potential (VSA) of the main FET (QA) obtained when a load current (ID) flowing the main FET (QA) is not within the range of an over current containing a transient component is not lower than a source potential (VSB) of the reference FET (QB) is not lower than the reference source potential, and so that the transient current component starts to be fed whenever the voltage comparator detects that the main source potential is lower than the reference source potential;

~~a voltage comparator (CMP1) detecting that the source potential (VSA) of the main FET is lower than the source potential (VSB) of the reference FET;~~

~~a counter[[s]](4, 14) for counting the number of times of vibrations of the main source potential reference current (Iref) to a predetermined number of times on the basis of the detection detecting of the voltage comparator, (CMP1), and the gate driving circuit turns OFF the multi-source field effect transistor when the counter exceeds the predetermined number.~~

~~a gate driving circuit (8) turning an OFF state of the main FET (AQ) by counting of the counter.~~

2. (currently amended) The device as claimed in claim 1, wherein ~~the voltage comparator (CMP1) detects that the source potential (VSA) of the main FET is not lower than the source potential (VSB) of the reference FET, whereby the gate driving circuit (8) turns ON the main FET (AQ) operation of the counter is cancelled when an interval between any two successive detections by the voltage comparator is longer than a predetermined interval.~~

Claims 3-6 (canceled)

7. (currently amended) The device as claimed in claim 1 5, further comprising a dummy voltage setting circuit(2),

wherein the vibration of the main source potential, is the a repetition of the an
ON/OFF operation of the multi-source field effect transistor at the main source electrode
~~the main field effect transistor (QA) is and wherein:~~

~~is that the voltage comparator (CMP1) detects that the main source potential~~
~~(VSA) is lower than the reference of the main FET is the source potential (VSB), of the~~
~~reference FET, whereby the gate driving circuit (8) turns OFF the multi-source field~~
~~effect transistor main FET (QA) and the reference FET (QB);~~

~~the dummy voltage setting circuit (2) sets a first potential (potential at point A)~~
~~lower than the main source potential (VSA) of the main FET; and~~

~~the voltage comparator (CMP1) detects that the reference source potential (VSB)~~
~~of the reference FET rising is becomes greater than the second potential, and [[is]]~~
~~becomes greater than the main source potential (VSA) of the main FET, whereby the~~
~~gate driving circuit (8) turns OFF the multi-source field effect transistor main FET (QA)~~
~~and the reference FET (QB).~~

8. (currently amended) The device as claimed in claim 1, wherein, when in the
~~case where the main source potential (VSA) of the main FET is equal to the reference~~
~~source potential (VSB) of the reference FET, [[a]] an "n" value is obtained as "n" when a~~
~~load current (ID) flowing the main FET (AQ) is divided by the reference current (Iref),~~
and

wherein the reference current setting circuit (11) comprises:

a constant component circuit (14) providing a feeding the constant component,
current (Iref) ~~that~~ which is greater than a value obtained by dividing by "n" a current

value in a constant state when the load current (~~ID~~) is outside ~~not within~~ the range of an the over-current by "n"; and

a transient component circuit (~~13~~) ~~that flows~~ providing the transient component, current (~~Iref~~) ~~that~~ which is greater than a value obtained by dividing by "n", a current value of a transient component in a transient state when the load current (~~ID~~) is outside ~~not within~~ the range of an the over-current by "n".

Claim 9 (canceled)

10. (currently amended) The device as claimed in claim 4 ~~8~~, wherein the transient component circuit (~~13~~) ~~feeding the transient component current (Iref)~~ is that ~~the transient component circuit (13) is fed~~ provides the transient component current at the a first predetermined time and at the ~~predetermined~~ a constant current value; and wherein the transient current component ~~the source potential of the reference FET is decreased within a~~ the range such that the reference source potential (~~VSA~~) of the ~~reference FET~~ does not exceed the main source potential (~~VSA~~) of the ~~main FET~~, and is set to be substantially zero within the a second predetermined time after an ~~elapse of the first predetermined time~~ has elapsed.

11. (currently amended) The device as claimed in claim 10, wherein the transient component circuit (~~13~~) feeding the transient component current (~~Iref~~) is started by the voltage comparator (~~CMP1~~) detecting that the main source potential (~~VSA~~) of the

~~main FET~~ is lower than the reference source potential (V_{SB}) of the ~~reference FET~~, and is not started within the second predetermined time.

12. (currently amended) The device as claimed in claim 10, wherein ~~the a~~ predetermined number of vibrations ~~of times~~ in the ~~determined~~ first predetermined time is less than ~~the a~~ predetermined number of vibrations ~~of times~~ in the second predetermined time.

13. (currently amended) An over-current shutdown method comprising:
a step A of feeding a reference current (I_{ref}) ~~that including a the~~ constant component current (I_{refc}) and ~~the a~~ transient component current (I_{reftr}) to the ~~reference FET (QB)~~ a reference source electrode so such that the a main source potential (V_{SA}) of the ~~main FET (QA)~~ a multi-source field effect transistor at a main source electrode is provided obtained when a ~~the~~ load current (I_D) flowing the ~~main FET QA~~ at the main source electrode containing a transient component is not within the range of an over-current ~~containing the transient component and~~ is not lower than the reference source potential (V_{SB}) of the ~~reference FET (QB)~~ multi-source field effect transistor at a reference source electrode;

a step B of detecting that the main source potential (V_{SA}) of the ~~main FET~~ is less lower than the reference source potential (V_{SB}) of the ~~reference FET~~;

a step C of starting the reference current (I_{ref}) to vibrate ~~vibrating by detecting in the step B~~ when the main source potential is less than the reference source potential,

a step D of counting a ~~the~~ number of ~~times of the vibrations~~ vibrating of the step C to the a predetermined number of times; and

a step ~~E~~ of turning OFF the multi-source field effect transistor ~~the main FET (QA)~~
by counting the number of vibrations ~~the step D~~.

Claims 14-24 (canceled)

AMENDMENTS TO THE DRAWINGS:

The attached sheets of drawings include changes to Figs. 1, 2, 12, and 20. No new matter has been added.

Attachments: Replacement Sheets: 4 sheets (FIGs. 1, 2, 12, and 20)
Annotated Sheets (showing changes to the 4 sheets (FIGs. 1, 2, 12, and 20))